Of the Penetration of a Hemisphere by an indefinite Number of equal and similar Cylinders. By Thomas Knight, *Esq. Communicated by Sir* Humphry Davy, *LL.D. Sec. R.S.* Read March 19, 1812. [*Phil. Trans.* 1812, *p.* 310.]

The problem which Mr. Knight here undertakes to solve, is to pierce a hemisphere perpendicularly to the plane of its base, with any number of equal and similar cylinders of such kind, that after the removal of these cylinders, the remainder of the hemisphere shall admit of exact cubature; and when the surface has been thus perforated, the remaining surface shall admit of exact quadrature.

But the solution of this problem, as well as of those contained in the preceding communication, was, of course, such as not to admit of being publicly read.

On the Motions of the Tendrils of Plants. By Thomas Andrew Knight, *Esq. F.R.S. In a Letter to the Right Hon. Sir* Joseph Banks, *Bart. K.B. P.R.S.* Read May 4, 1812. [*Phil. Trans.* 1812, *p.* 314.]

Some naturalists have supposed tendrils to be endued with some degree of perception, to which their propensity to approach neighbouring objects may be ascribed; and though others who have written on the same subject may have rejected this hypothesis, it does not appear to Mr. Knight that any direct experiments have been made similar to those which he here describes, for the purpose of ascertaining whether these motions may not be ascribed to peculiarity of organization, aided by the operation of external causes.

The plants selected for his experiments were, the Virginia Creeper, the Ivy, the Vine, and the Pea. When a young plant of the creeper, trained directly upwards, was placed alone in the centre of a forcing-house, its tendrils were all turned towards the north wall; but as this was out of their reach, they declined gradually, and ultimately fixed themselves on the upright stem beneath and upon its support.

When other plants were placed near the glass, their tendrils were always directed from the light, as in the former instance, although no object was within their reach on the dark side.

Mr. Knight next tried the effect of placing near them a piece of dark paper; to this they appeared to be strongly attracted, and when the paper was removed to a new position, the tendrils were found to follow it. When a piece of glass was substituted for the paper, the tendrils showed no disposition to approach it; but, on the contrary, when it was placed so as to reflect the light of the sun upon the tendrils, they appeared to be strongly repelled by it.

In making corresponding experiments on the ivy, Mr. Knight found the same propensity in its claspers to recede from the light; but it was necessary to place substances much nearer than in the former experiments for them to manifest any appearance of spontaneous motion.

When a young plant of the vine was placed under the same cir-